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RAW SEQUENCE LISTING   DATE: 02/13/2002
PATENT APPLICATION: US/09/910,009A   TIME: 15:19:11

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

P⁵

ENTERED

```
 3 <110> APPLICANT: University of Utah Research Foundation
 4        Cognetix, Inc.
 5        Olivera, Baldomero M.
 6        McIntosh, J. Michael
 7        Garrett, James E.
 8        Watkins, Maren
 9        Cruz, Lourdes J.
10        Shon, Ki-Joon
11        Jacobsen, Richard
12        Jones, Robert M.
13        Cartier, G. Edward
14        Shen, Greg S.
15        Wagstaff, John D.
17 <120> TITLE OF INVENTION: Mu-Conopeptides
19 <130> FILE REFERENCE: 2314-242
21 <140> CURRENT APPLICATION NUMBER: US/09/910,009A
21 <141> CURRENT FILING DATE: 2001-07-23
21 <150> PRIOR APPLICATION NUMBER: US 60/219,619
22 <151> PRIOR FILING DATE: 2000-07-21
24 <150> PRIOR APPLICATION NUMBER: US 60/245,157
25 <151> PRIOR FILING DATE: 2000-11-03
27 <150> PRIOR APPLICATION NUMBER: US 60/264,319
28 <151> PRIOR FILING DATE: 2001-01-29
30 <150> PRIOR APPLICATION NUMBER: US 60/277,270
31 <151> PRIOR FILING DATE: 2001-03-21
33 <160> NUMBER OF SEQ ID NOS: 520
35 <170> SOFTWARE: PatentIn version 3.0
37 <210> SEQ ID NO: 1
38 <211> LENGTH: 280
39 <212> TYPE: DNA
40 <213> ORGANISM: Conus arentus
42 <400> SEQUENCE: 1
43 caagaaggat cgatagcagt tcatgatgtc taaactggga gtcttcttga ccatctgtat    60
45 gcttctgttt ccccttactg ctcttccgct ggatggggat caacctgcag accgacctgc   120
47 agagcgtatg caggacgact ttataactga gcatcatccc ctgtttgatc ctgtcaaacg   180
49 gtgttgcgag aggccatgca acataggatg cgtaccttgt tgttaatgac cagctttgtc   240
51 atcgcggcct catcaagcga ataagtaaaa cgattgcagt                         280
54 <210> SEQ ID NO: 2
55 <211> LENGTH: 67
56 <212> TYPE: PRT
57 <213> ORGANISM: Conus arentus
59 <400> SEQUENCE: 2
61 Met Met Ser Lys Leu Gly Val Phe Leu Thr Ile Cys Met Leu Leu Phe
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/910,009A

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

```
                                      10                  15
62 1              5
64 Pro Leu Thr Ala Leu Pro Leu Asp Gly Asp Gln Pro Ala Asp Arg Pro
65              20              25              30
67 Ala Glu Arg Met Gln Asp Asp Phe Ile Thr Glu His His Pro Leu Phe
68         35              40                  45
70 Asp Pro Val Lys Arg Cys Cys Glu Arg Pro Cys Asn Ile Gly Cys Val
71     50              55                  60
73 Pro Cys Cys
74 65
76 <210> SEQ ID NO: 3
77 <211> LENGTH: 14
78 <212> TYPE: PRT
79 <213> ORGANISM: Conus arentus
81 <220> FEATURE:
82 <221> NAME/KEY: PEPTIDE
83 <222> LOCATION: (1)..(14)
84 <223> OTHER INFORMATION: Xaa at residue 3 is Glu or gamma-carboxy Glu; Xaa at residue
5 an
85         d 12 is Pro or Hyp
88 <400> SEQUENCE: 3
90 Cys Cys Xaa Arg Xaa Cys Asn Ile Gly Cys Val Xaa Cys Cys
91 1              5                  10
93 <210> SEQ ID NO: 4
94 <211> LENGTH: 244
95 <212> TYPE: DNA
96 <213> ORGANISM: Conus atlanticus
98 <400> SEQUENCE: 4
99 ggatccatga tgtctaaact gggagtcttg ttgaccatct gtctgcttct gtttccactt      60
101 actgctcttc cgctggatga agatcaaccg gtacaccgac ctgcagagcg tatgcaggac    120
103 atttcatctg atcaacatct cttctttgat ctcatcaaac ggtgctgcga gttgccatgc    180
105 gggccaggct tttgcgtccc ttgttgctga catcaataac gtgttgatga ccaactttct    240
107 cgag                                                                   244
110 <210> SEQ ID NO: 5
111 <211> LENGTH: 69
112 <212> TYPE: PRT
113 <213> ORGANISM: Conus atlanticus
115 <400> SEQUENCE: 5
117 Gly Ser Met Met Ser Lys Leu Gly Val Leu Leu Thr Ile Cys Leu Leu
118 1              5              10                  15
120 Leu Phe Pro Leu Thr Ala Leu Pro Leu Asp Glu Asp Gln Pro Val His
121              20              25              30
123 Arg Pro Ala Glu Arg Met Gln Asp Ile Ser Ser Asp Gln His Leu Phe
124         35              40                  45
126 Phe Asp Leu Ile Lys Arg Cys Cys Glu Leu Pro Cys Gly Pro Gly Phe
127     50              55                  60
129 Cys Val Pro Cys Cys
130 65
132 <210> SEQ ID NO: 6
133 <211> LENGTH: 15
134 <212> TYPE: PRT
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/910,009A

DATE: 02/13/2002
TIME: 15:19:12

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

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135 <213> ORGANISM: Conus atlanticus
137 <220> FEATURE:
138 <221> NAME/KEY: PEPTIDE
139 <222> LOCATION: (1)..(15)
140 <223> OTHER INFORMATION: Xaa at residue 3 is Glu or gamma-carboxy Glu; Xaa at residue
5, 8
141        and 13 is Pro or Hyp
144 <400> SEQUENCE: 6
146 Cys Cys Xaa Leu Xaa Cys Gly Xaa Gly Phe Cys Val Xaa Cys Cys
147 1               5                   10              15
149 <210> SEQ ID NO: 7
150 <211> LENGTH: 310
151 <212> TYPE: DNA
152 <213> ORGANISM: Conus aurisiacus
154 <400> SEQUENCE: 7
155 caagagggat cgatagcagt tcatgatgtc taaactggga gtcttgttga ccatctgttt    60
157 gcttctgttt ccccttactg ctcttccgat ggatggagat caatctgtag accgacctga   120
159 agagcgtatg caggacgaca tttcatctga gcagcatccc ttgtttaatc agaaaagaat   180
161 gtgttgcggc gaaggccgga aatgccccag ctatttcaga aacagtcaga tttgtcattg   240
163 ttgttaaatg acaacgtgtc gatgaccaac ttcgttatca cgactaatga ataagtaaaa   300
                                                                        310
165 cgattgcagt
168 <210> SEQ ID NO: 8
169 <211> LENGTH: 74
170 <212> TYPE: PRT
171 <213> ORGANISM: Conus aurisiacus
173 <400> SEQUENCE: 8
175 Met Met Ser Lys Leu Gly Val Leu Leu Thr Ile Cys Leu Leu Leu Phe
176 1               5                   10              15
178 Pro Leu Thr Ala Leu Pro Met Asp Gly Asp Gln Ser Val Asp Arg Pro
179             20              25                  30
181 Glu Glu Arg Met Gln Asp Asp Ile Ser Ser Glu Gln His Pro Leu Phe
182         35              40                  45
184 Asn Gln Lys Arg Met Cys Cys Gly Glu Gly Arg Lys Cys Pro Ser Tyr
185     50              55                  60
187 Phe Arg Asn Ser Gln Ile Cys His Cys Cys
188 65                  70
190 <210> SEQ ID NO: 9
191 <211> LENGTH: 22
192 <212> TYPE: PRT
193 <213> ORGANISM: Conus aurisiacus
195 <220> FEATURE:
196 <221> NAME/KEY: PEPTIDE
197 <222> LOCATION: (1)..(22)
198 <223> OTHER INFORMATION: Xaa at residue 5 is Glu or gamma-carboxy Glu; Xaa at residue
10 i
199        s Pro or Hyp; Xaa at residue 12 is Tyr, 125I-Tyr, mono-iodo-Tyr,
200        di-iodo-Tyr, O-sulpho-Tyr or O-phospho-Tyr
203 <400> SEQUENCE: 9
205 Met Cys Cys Gly Xaa Gly Arg Lys Cys Xaa Ser Xaa Phe Arg Asn Ser
206 1               5                   10              15
208 Gln Ile Cys His Cys Cys
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/910,009A

DATE: 02/13/2002
TIME: 15:19:12

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

```
209             20
211 <210> SEQ ID NO: 10
212 <211> LENGTH: 257
213 <212> TYPE: DNA
214 <213> ORGANISM: Conus aurisiacus
216 <400> SEQUENCE: 10
217 ggatccatga tgtctaaact gggagtcttg ttgaccatct gtttgcttct gtttcccctt      60
219 actgctcttc cgatcgatgg agatcaatct gtagaccgac ctgcagagcg tatgcaggat     120
221 gacatttcat ctgagcagca tcgcttgttc aatcagaaaa gaaggtgctg ccggtggcca     180
223 tgcccccgac aaatcgacgg tgaatattgt ggctgttgcc ttggatgata accgtgttga     240
225 tgaccaactt tctcgag                                                    257
228 <210> SEQ ID NO: 11
229 <211> LENGTH: 75
230 <212> TYPE: PRT
231 <213> ORGANISM: Conus aurisiacus
233 <400> SEQUENCE: 11
235 Gly Ser Met Met Ser Lys Leu Gly Val Leu Leu Thr Ile Cys Leu Leu
236 1               5              10              15
238 Leu Phe Pro Leu Thr Ala Leu Pro Ile Asp Gly Asp Gln Ser Val Asp
239          20              25              30
241 Arg Pro Ala Glu Arg Met Gln Asp Asp Ile Ser Ser Glu Gln His Arg
242          35              40              45
244 Leu Phe Asn Gln Lys Arg Arg Cys Cys Arg Trp Pro Cys Pro Arg Gln
245       50              55              60
247 Ile Asp Gly Glu Tyr Cys Gly Cys Cys Leu Gly
248 65              70              75
250 <210> SEQ ID NO: 12
251 <211> LENGTH: 19
252 <212> TYPE: PRT
253 <213> ORGANISM: Conus aurisiacus
255 <220> FEATURE:
256 <221> NAME/KEY: PEPTIDE
257 <222> LOCATION: (1)..(19)
258 <223> OTHER INFORMATION: Xaa at residue 13 is Glu or gamma-carboxy Glu; Xaa at
residue 5 a
259         nd 7 is Pro or Hyp; Xaa at residue 4 is Trp or Bromo Trp; Xaa at
260         residue 14 is Tyr, 125I-Tyr, mono-iodo-Tyr, di-iodo-Tyr, O-sulpho
261         -Tyr or O-phospho-Tyr
264 <400> SEQUENCE: 12
266 Cys Cys Arg Xaa Xaa Cys Xaa Arg Gln Ile Asp Gly Xaa Xaa Cys Gly
267 1               5              10              15
269 Cys Cys Leu
272 <210> SEQ ID NO: 13
273 <211> LENGTH: 262
274 <212> TYPE: DNA
275 <213> ORGANISM: Conus aurisiacus
277 <400> SEQUENCE: 13
278 ggatccatga tgtctaaact gggagtcttg ttgaccatct gtctacttct gtttcccctt      60
280 actgcttttc cgatggatgg agatcaacct gcagaccaac ctgcagatcg tatgcaggac     120
282 gacatttcat ctgagcagta tcccttgttt gataagagac aaaagtgttg cactgggaag     180
```

RAW SEQUENCE LISTING   DATE: 02/13/2002
PATENT APPLICATION: US/09/910,009A   TIME: 15:19:12

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

```
284 aaggggtcat gctccggcaa agcatgcaaa aatctcaaat gttgctctgg acgataacgt    240
286 gttgatgacc aactttctcg ag                                            262
289 <210> SEQ ID NO: 14
290 <211> LENGTH: 78
291 <212> TYPE: PRT
292 <213> ORGANISM: Conus aurisiacus
294 <400> SEQUENCE: 14
296 Gly Ser Met Met Ser Lys Leu Gly Val Leu Leu Thr Ile Cys Leu Leu
297 1               5                  10              15
299 Leu Phe Pro Leu Thr Ala Phe Pro Met Asp Gly Asp Gln Pro Ala Asp
300              20                  25              30
302 Gln Pro Ala Asp Arg Met Gln Asp Asp Ile Ser Ser Glu Gln Tyr Pro
303          35                  40              45
305 Leu Phe Asp Lys Arg Gln Lys Cys Cys Thr Gly Lys Lys Gly Ser Cys
306      50                  55              60
308 Ser Gly Lys Ala Cys Lys Asn Leu Lys Cys Cys Ser Gly Arg
309 65                  70                  75
311 <210> SEQ ID NO: 15
312 <211> LENGTH: 23
313 <212> TYPE: PRT
314 <213> ORGANISM: Conus aurisiacus
316 <220> FEATURE:
317 <221> NAME/KEY: PEPTIDE
318 <222> LOCATION: (1)..(23)
319 <223> OTHER INFORMATION: Xaa at residue 1 is Gln or pyro-Glu
322 <400> SEQUENCE: 15
324 Xaa Lys Cys Cys Thr Gly Lys Lys Gly Ser Cys Ser Gly Lys Ala Cys
325 1               5                  10              15
327 Lys Asn Leu Lys Cys Cys Ser
328              20
330 <210> SEQ ID NO: 16
331 <211> LENGTH: 232
332 <212> TYPE: DNA
333 <213> ORGANISM: Conus aurisiacus
335 <400> SEQUENCE: 16
336 ggatccatga tgtctaaact gggagtcttg ctgaccatct gtctgcttct gtttccactt    60
338 actgctgttc cgctggatgg agatcaacct ctagaccgac acgcggagcg tatgcatgat   120
340 ggcatttcac ctaaacgcca tccctggttt gatcccgtca acggtgttg caaggtgcaa    180
342 tgcgagtctt gcaccccttg ttgctaacgt gttgatgacc aactttctcg ag           232
345 <210> SEQ ID NO: 17
346 <211> LENGTH: 68
347 <212> TYPE: PRT
348 <213> ORGANISM: Conus aurisiacus
350 <400> SEQUENCE: 17
352 Gly Ser Met Met Ser Lys Leu Gly Val Leu Leu Thr Ile Cys Leu Leu
353 1               5                  10              15
355 Leu Phe Pro Leu Thr Ala Val Pro Leu Asp Gly Asp Gln Pro Leu Asp
356              20                  25              30
358 Arg His Ala Glu Arg Met His Asp Gly Ile Ser Pro Lys Arg His Pro
```

Use of n and/or Xaa has been detected in the Sequence Listing.
Review the Sequence Listing to insure a corresponding
explanation is presented in the <220> to <223> fields of
each sequence using n or Xaa.

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/910,009A

Input Set : **A:\2314-242rev.ST25.txt**
Output Set: **N:\CRF3\02132002\I910009A.raw**

```
L:21 M:270 C: Current Application Number differs, Replaced Current Application No
L:21 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:90 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:146 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:205 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9
L:266 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:324 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18
L:438 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21
L:494 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24
L:550 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:606 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30
L:609 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30
L:667 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36
L:788 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39
L:851 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42
L:911 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:914 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:974 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48
L:1037 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51
L:1093 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:54
L:1152 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:57
L:1212 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:60
L:1215 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:60
L:1274 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:63
L:1277 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:63
L:1332 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:66
L:1390 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:69
L:1447 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72
L:1506 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:75
L:1567 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:78
L:1626 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:81
L:1685 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:84
L:1741 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:87
L:1800 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90
L:1859 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:93
L:1915 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:96
L:1990 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:99
L:1993 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:99
L:2068 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:2071 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:2087 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103
L:2090 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103
L:2150 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:106
L:2209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:109
L:2212 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:109
L:2274 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:112
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VERIFICATION SUMMARY   DATE: 02/13/2002
PATENT APPLICATION: US/09/910,009A   TIME: 15:19:13

Input Set : A:\2314-242rev.ST25.txt
Output Set: N:\CRF3\02132002\I910009A.raw

```
L:2332 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:115
L:2389 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:118
L:2392 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:118
L:2451 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:121
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